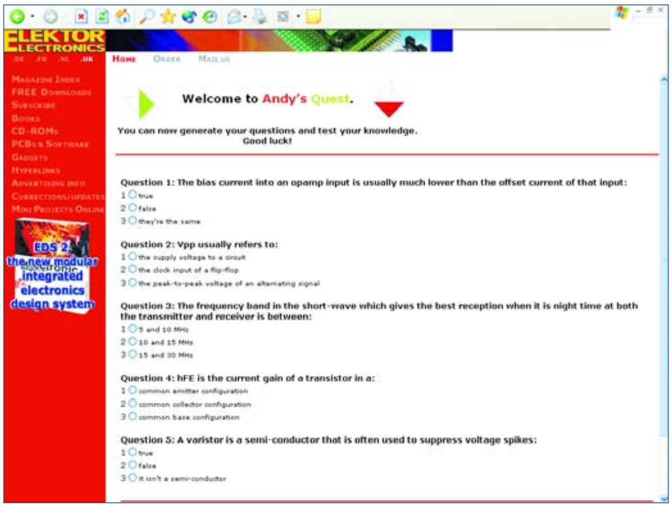
Andy's Quest

A new quiz has been launched on our website www.elektor-electronics.co.uk in which you can test your knowledge of electronics theory. Participation is free and anonymous.

Each round of Andy's Quest draws a random selection of five multiple choice questions from a base of about 400. Have fun!



Welcome to Andy's Quest.

You can now generate your questions and test your knowledge.
Good luck!

Question 1: The bias current into an opamp input is usually much lower than the offset current of that input:
1 ○ true
2 ○ false
3 ○ they're the same

Question 2: Vpp usually refers to:
1 ○ the supply voltage to a circuit
2 ○ the clock input of a flip-flop
3 ○ the peak-to-peak voltage of an alternating signal

Question 3: The frequency band in the short-wave which gives the best reception when it is night time at both the transmitter and receiver is between:
1 ○ 5 and 10 MHz
2 ○ 10 and 15 MHz
3 ○ 15 and 30 MHz

Question 4: hFE is the current gain of a transistor in a:
1 ○ common emitter configuration
2 ○ common collector configuration
3 ○ common base configuration

Question 5: A varistor is a semi-conductor that is often used to suppress voltage spikes:
1 ○ true
2 ○ false
3 ○ it isn't a semi-conductor

Railrouter project software

The author of the project, Mr. Ray King, kindly advised us that the 'Serial OCX' module he originally used in the Railrouter software was protected by copyrights owned by Everyday Practical Electronics (EPE) magazine. A new version of the compiled Railrouter software, eliminating the dependency on EPE's Serial OCX utility, is now available from the Free Downloads section of the Elektor Electronics website. We apologize to EPE for having distributed their copyrighted OCX module during the period 16 through 28 June 2004.

C for AVR Micros

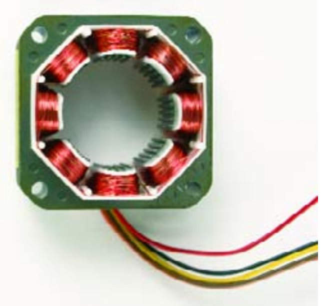
A number of readers keep asking us about C compilers for Atmel AVR microcontrollers. We can recommend AVR-GCC for stability and the fact that it's free! See www.avrfreaks.net

Out of Step

Dear Jan, I believe the photograph printed as the head of your article 'First Steps' in the May 2004 issue shows the internals of a synchronous three-phase motor, not a stepper motor. The letters printed near the three solder pads in the centre provide clues to the motor having been taken from a floppy disk drive.

D. Jansen, The Netherlands

Our apologies and we make amends by printing these photos of a real stepper motor.



Clarity Class-T Amp

Dear people at Elektor, congratulations on the awesome class-T amplifier (June 2004). But where is the chip available from in UK? I managed to locate the MOSFETs at www.farnell.co.uk, but a search of the TA3020 revealed nothing. Many thanks for a cutting edge publication.

Gerard Galvin

Fishing for chips

Dear Editor, first let me congratulate you on the new look magazine; it is a big improvement. I imagine your main readers are professional electronics engineers who have ready access to obscure chips direct from the suppliers. As an amateur I find many of your projects of interest to me cannot be built because they depend on chips that not available in single quantities (even after a search on the Internet worldwide). In particular the high-end pre-amp and the versatile final amplifier of a few years ago. The same problem arises with your new Class-T amplifier project. These all depend on a single crucial, but unobtainable, chip. Would it be possible to supply these through your magazine or at least for the authors to specify a supplier?

Malcolm Read

Here is the contact information for Tripath's UK distributor: Profusion plc, Aviation Way, Southend-on-Sea, Essex SS2 6UN. Tel: +44 1702 543500, Fax: +44 1702 543700. sales@profusionplc.com

Two internationally operating suppliers of kits and components specifically for Elektor projects are:
Geist Electronic, www.geist-electronic.de
DIL Electronics, www.dil.nl

PA300 Amplifier

Hi again Jan, I'd like to construct the PA300 amplifier, but I'd like to know if this is possible.

I don't have the 625-VA transformer required, but instead I have two of 300-VA 40-0-40V transformers which I was going to use to build a stereo version of the PA300. Now I understand that I will not achieve 300 watts into 4 ohms per channel based on 300 VA.

What I'd like to know clearly is what the estimated power output will be for 8 & 4 ohms on 300 VA. I will use one transformer per channel.

I know there will be reduced power which will be enough for my needs but like to know what that is and for example will there be higher distortion?

Also I have 10,000 uF capacitors rated at 63 V, can I use 63-V capacitors in the power supply instead of 100 V as specified in the parts list? As my transformer delivers 40 Vac per rail this would be about 56 Vdc, so well below 63 V.

Can I still build this amplifier with this reduced power supply and is the setup of the quiescent current the same? I've always wanted to build this amp but haven't been too sure on a few things. I've heard many good things about it.

Ed Zammit (Melbourne)

Well Ed the lower transformer voltage will cause a supply voltage reduction of about 4 volts (at zero load). This will only decrease the maximum power output. The music power to be expected is 260 W into 4 ohms and 150 W into 8 ohms. Continuous power will be even less, due to the reduced power rating of the transformer and is hard to predict, because of unknown overload properties.

USB-to Analogue Converter Dear Jan, in the November 2003 issue, downloads for the USB Analogue Converter were stated to be available from the Elektor website. However, the HEX file used in the project (Elk.hex) was not one of the files included in the zipped file 020374-11 (hex code and Windows software). Also, it was not clear what files were required in the MPLAB project to compile and program the PIC16C765. If possible, could you provide the necessary information to enable me to finish this excellent project.

Kieran McAreavey

Several readers have asked basically the same question. The required HEX file (ELK35.HEX) is in the zip file under the directory 'fic_ass'. The source code provided is not guaranteed to be of direct use in MPLAB. It is not clear which assembler the author of the article used, so we are unable to help you with assembling the source code using MPLAB. This should be fairly easy however. Due to the fact that the HEX-file is included there is no direct need for you to assemble the source-code again, unless you want to modify the firmware to suit your own requirements.

High-End Preamplifier

Dear Editor, by now this should be a very popular question: what is the manufacturer's name (and P.N.) for the 16x2 LCD used in the High-end Preamp (April and May 2004)? I mean the one used by the author, Benjamin Hinrichs (the audiophile community owes him a lot!). I don't know if there's a standard interface and any equivalent part would fit....

Sergiu Ignat (Montreal)

Farnell (www.farnell.com) have a series of All Shore Industries, Inc. in stock. Look for order code 412-7316. The module Mr. Hinrichs used is of unknown origin.

Simple 12-to-230V Power Inverter Dear Editor, I am a teacher at a Polytechnic and would like to use the Simple 12-to-230V Power Inverter (February 2004) as a classroom project. Unfortunately I can not quite grasp the function of the 'R-C-Z diode' combination (D4, R14, C9, C10) in your circuit. Is this some kind of protective circuit? Also, what is the specification for the heat-sink as that information is missing from the article.

Oliver Sluka (Austria)

When T1 or T2 switches off, harmful voltage peaks may occur at the drain because an inductance (in fact, an non-ideal transformer) is seen between X2-X4. Diode D5 shunts these peaks into C9 and C10. These capacitors have to be discharged, however, to prevent them building up excessive voltage levels. As soon as the voltage on C9 exceeds the supply level plus the zener voltage (i.e., approx. 30 volts), the charge is shunted off preventing the capacitor voltage from rising further. D5 and D6 ensure that C9 and C10 do not affect the operation of te inverter under normal circumstances. Without these diodes, the capacitors could give rise to resonance. D5 and D6 only serve as damping devices when the voltage exceeds 30 V.

The heat sink specification is 10 K/W minimum.

CORRECTIONS & UPDATES

Build Your Own DRM receiver

March 2004, p.12, 030365-1

New software has been developed for this project that allows an USB/RS232 adapter to be used. This means the receiver can now be controlled from a laptop without a serial port. Free Download, see September 2004 items.

First Steps

May 2004, p. 30-34, 030203-1

In the circuit diagram the value of R17 and R18 is shown as 10 k, while 1 M appears in the parts list. The value is not critical but in practice 10 k will provide the best protection against noise at the FET inputs.

Personal Sound to Light Unit

June 2004, p. 58-60, 030019-1

The type code of IC1 should be LM358, not LM385 (text, parts list and schematic).

DDS RF Signal Generator

October 2003, p.14-22, 020299-1

Constructors are advised that a new version of the controller firmware is now available (ref. 020299-41). The update solves the problem of the software crashing when the 'B' key is pressed to switch between dBm and V. For a free update, return your controller chip with the Elektor ESS sticker on it to Readers Services, att. Mr. J. Visser, Software Service.

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